

REMARKS

Reconsideration and allowance of this application are respectfully requested. Claims 67-71 are allowed. Claims 72-119 are cancelled. Claims 1-66, as amended herein, are submitted for the Examiner's reconsideration.

Applicants request the change of the Attorney Docket No. of the present application from "EMCORE 3.0-085" to "VELOX 3.0-002".

In the Office Action, the Examiner acknowledged the election without traverse of claims 1-71 and withdrew claims 72-119 from consideration. Claims 72-119 are therefore cancelled. Applicants reserve the right to file one or more divisional applications covering the subject matter of the non-elected claims.

The disclosure was objected to because of informalities. Paragraphs [0030], [0032], [0035], and [0038] have been corrected in the manner suggested by the Examiner.

Turning now to the art rejections, claims 1, 3, 4, 6, 10, 23, 34, 37, 42 and 55 were rejected under 35 U.S.C. § 102(e) as being anticipated by Asano (U.S. Patent No. 6,627,967). It is submitted, however, that the claims are patentably distinguishable over Asano.

The Asano patent shows, in Fig. 1, a Schottky diode in which an n+ epitaxial layer is formed on an n+ GaAs substrate, and an n epitaxial layer is formed on part of the n+ epitaxial layer. An ohmic electrode contact is formed on an exposed part of the n+ epitaxial layer, and a Schottky electrode contacts a Schottky contact region of the n epitaxial layer. Fig. 2 shows a top view of the Schottky barrier diode depicted in Fig. 1. The Schottky contact region occupies a central portion of the device and contacts the Schottky electrode at a contact hole formed at the center of the Schottky contact region. The ohmic electrode contacts the n+ epitaxial layer and surrounds the

circular Schottky contact region and also occupies one half of the top surface of the device. Mesa etching through the n epitaxial layer is used to expose the n+ epitaxial layer. (See col. 1, lines 25-44; and col. 2, lines 18-29 and 43-46).

Asano, therefore, merely shows a Schottky diode having a *single mesa* located at the center of the device. The patent does not disclose or suggest a *plurality of mesas* projecting upwardly from the lower contact surface.

Asano does not disclose or suggest:

a semiconductor body including a lower semiconductor layer and an upper semiconductor layer formed atop a portion of said lower semiconductor layer, said lower semiconductor layer and said upper semiconductor layer being of a same conductivity type, said lower semiconductor layer being more highly doped than said upper semiconductor layer, said semiconductor body defining a lower contact surface and a plurality of mesas projecting upwardly from said lower contact surface, said lower contact surface including at least a portion of said lower layer, each of said plurality of mesas including a portion of said upper layer and defining an upper contact surface, each of said plurality of mesas being separated from adjacent ones of said plurality of mesas by a portion of said lower contact surface

as called for in claim 1.

Moreover, Asano shows only a *single Schottky contact* disposed atop the one mesa. The patent does not disclose or suggest a *plurality of upper metallic contacts* and does not disclose or suggest a *plurality of upper metallic contacts each disposed atop a respective one of a plurality of mesas*.

Asano does not disclose or suggest:

a plurality of upper metallic contacts each disposed atop a respective one of said plurality of mesas and forming a respective Schottky contact with the upper contact surface of that mesa

as defined in claim 1.

It follows that Asano does not disclose or suggest the combination recited in claim 1 and therefore does not anticipate the claim.

Claims 3, 4, 6, 10 and 23 depend from claim 1 and each further defines and limits the invention set out in the independent claim. Claims 3, 4, 6, 10 and 23 are therefore each distinguishable over Asano for at least the same reasons.

Independent claim 34 defines a Schottky diode that includes a semiconductor body having a plurality of mesas similar to that defined in claim 1 and that includes a plurality of upper metallic contacts similar to that defined in claim 1. Claim 34 is therefore patentably distinguishable over Asano at least for the same reasons.

Claims 37, 42 and 55 depend from claim 34 and are distinguishable over Asano for at least the same reasons.

The Examiner also rejected claim 66 under 35 U.S.C. § 102(e) as being anticipated by Li (U.S. Patent No. 6,624,444). However, it is submitted that claim 66 is patentably distinguishable over Li.

The Li patent shows, in Fig. 1B, a device package having contact receiving members on its top surface. Some of the contact receiving members of the top surface are connected to contact receiving members on the lower surface by conductors that pass through the thickness of the package, and other contact receiving members of the top surface are connected to other contact receiving members on the lower surface by other conductors that likewise pass through the package. Only one contact receiving member of the top surface and only one contact receiving member of the bottom surface are connected by a given conductor. (Col. 2, lines 46-60).

Li therefore depicts a package in which a given conductor connects *only one* contact receiving member of the top

surface to a contact receiving member of the lower surface. The patent does not disclose or suggest that two or more contact receiving members on the top surface are electrically connected to a common terminal on the top surface of the substrate, the patent does not disclose or suggest that a conducting via is electrically connected to the common terminal, and the patent does not disclose or suggest that a contact receiving member of the lower surface is electrically connected to two or more contact receiving members on the top surface.

Li does not disclose or suggest:

a first common terminal disposed on said front surface of said submount substrate, said first common terminal being electrically connected to said each of said two or more first submount contacts;

a first conducting via extending from said front surface of said submount substrate to a back surface of said submount substrate, said first conducting via being electrically connected to said first common terminal;

a first further terminal disposed on said back surface of said submount substrate and configured to provide connections external to said submount structure, said first further terminal being electrically connected to said first conducting via and thereby being electrically connected to said each of said two or more first submount contacts;

as defined in claim 66.

It follows that Li does not disclose or suggest the combination set out in claim 66 and therefore does not anticipate the claim.

Additionally, the Examiner rejected claims 2 and 35 under 35 U.S.C. § 103(a) as being unpatentable over Asano in view of Chiola (U.S. Patent Application Publication No. US 2005/0127465 A1). However, Chiola can not be relied on as prior art in the manner asserted by the Examiner.

The Examiner relies on paragraph [0010] of the Chiola publication which describes that an increased mesa region

results in a higher active area which is beneficial towards reducing the forward voltage drop of a device during forward conduction.

Chiola is a publication of an application filed on January 14, 2005, which is later than the February 17, 2004 filing date of the present application. Though Chiola is also a continuation-in-part of U.S. Patent No. 6,855,593 ("the '593 patent") that issued from an application filed on July 11, 2002, the '593 patent does not disclose the subject matter set out in paragraph [0010] of Chiola. Therefore, the subject matter relied on by the Examiner is not prior art and cannot be cited in rejecting claims 2 and 35.

Accordingly, the withdrawal of the rejections under 35 U.S.C. §§ 102(e) and 103(a) are respectfully requested.

The Examiner also objected to claims 5, 7-9, 11-22, 24-33, 36, 38-41, 43-54 and 56-65 as being dependent upon a rejected base claim but indicated that the claims would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Claims 5, 7-9, 11-22, and 24-33 depend from claim 1 and are therefore are in condition for allowance at least for the reasons set out above. Claims 36, 38-41, 43-54 and 56-65 depend from claim 34 and, at least for the reasons set out above, are also in condition for allowance.

Applicants express appreciation for the allowance of claims 67-71.

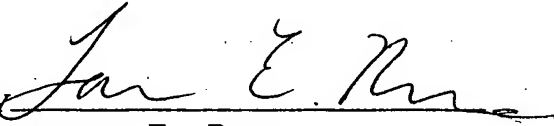
New claims 120-122 depend from claim 1, and new claims 123-125 depend from claim 34. Therefore, each of new claims 120-125 is distinguishable over the cited references for at least the same reasons. Support for new claims 120-125 is found, e.g., in paragraph [0050] of the specification.

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited. If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that the Examiner telephone applicant's attorney at (908) 654-5000 in order to overcome any additional objections which the Examiner might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: December 12, 2005

Respectfully submitted,

By 

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